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(19) AUSTRALIAN PATENT OFFICE

(54) Title
A COOL STORAGE CARTON

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(57) Claim

1. A carton suitable for containing goods to be kept in cool storage, said carton comprising a base member, a pair of side members extending from said base member and a pair of end members extending from said base member, said side members and said end members being folded and interconnected to define said carton, said side members and/or said end members being shaped whereby the dimensions of the side members and/or end members are narrower at the top of the carton than at the bottom of the carton, such that the sides and/or ends or the carton are inwardly inclined with respect to said base member.

# COMPLETE SPECIFICATION

FOR OFFICE USE

Application Number:
Lodged:
Class:
Int. Class:

Complete Specification - Lodged:
Accepted:
Published:

Priority:

Related Art:

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TO BE COMPLETED BY APPLICANT

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Complete Specification for the invention entitled:

COOL STORAGE CARTON

The following statement is a full description of this invention, including the best method of performing it known to me/us:

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Our Ref: #4351 TNB:CE 50.visyl

TITLE: COOL STORAGE CARTON

Field of the Invention:

This invention relates to packaging cartons and more particulary to cartons suitable for use in the storage of products in cool storage facilities.

Background of the Invention:

It is now common for vegetables, meat and other perishable products to be packaged for transport in reinforced corrugated board cartons. When such packaged products are held in storage or are transported, particularly for export, the cartons must be kept cool to prevent damage to the perishable contents. Often products require good air circulation to maintain their freshness or for gas ripening or fumigating purposes.

Since both storage space and transport space is at a premium, the cartons must be column stacked to maximize each pay load, and since movement of each carton should be avoided during transport, each column must be positioned closely adjacent another column to increase the stability of the overall load. When cartons are stacked in this manner, air or gas circulation to the cartons positioned in the middle of the stack may be restricted, thus leading to possible damage to or lack of treatment of the products located near the middle of the stack.

Summary of the Invention and Object:

It is an object of the present invention to provide an improved packing carton in which the above described problems associated with column stacking of the cartons are at least ameliorated.

The invention therefore provides a carton suitable for containing goods to be kept in cool storage, said carton comprising a base member, a pair of side members extending from said base member and a pair of end members extending from said base member, said side members and said end members being folded and interconnected to define said carton, said side members and/or said end members being shaped whereby the dimensions of the side members and/or end members are narrower at the top of the carton than at the bottom of the carton, such that the sides and/or ends or the carton are inwardly inclined with respect to said base member.

By forming the carton with inwardly inclined sides and/or ends, a significant air flow space will be created between adjacent cartons when column stacked so that cooling, ventilating or treating air may freely circulate between the cartons in the stack to thereby cool the cartons which are positioned internally of the stack. In addition, the inwardly tapered sides and/or ends make the carton more stable when column stacked and since the dimensions of the base member are similar to the external dimensions of any lid which may be provided to close the carton, the stability of the stack is enhanced since the possibility of lid sag is reduced in the event that some movement between the cartons in the stack occurs.

In a particularly preferred form of the invention, the end members only of the carton are shaped as defined above so that the sides of the carton are inclined inwardly towards the top. In this way, the complexity of the forming operation is reduced

without significantly reducing the benefits to the end product, since the maximum surface area is usually along the sides of a carton.

To provide additional top-to-bottom compression in the carton, the sides are preferably formed from a double thickness of the material from which the carton is formed, usually corrugated paper board. Similarly, the ends are formed from a double thickness of the corrugated board folded over inwardly folded end flaps of the side members and having edge portions frictionally engaging the side members.

The end flaps of the side members are preferably slotted or slit at an acute angle to the fold line in the side members such that a portion each end flap projects above the remainder of the end flap to provide a horizontal edge portion against which the fold in each end portion engages to maximize the compressive strength of the erected carton. Of course, if this angle slit in the end flaps of the side portions were not included, the upper most edge of the completed end flaps would lie at an angle to the horizontal due to the inward inclination of the sides caused by the shaping of the end members.

The folded side portions are preferably glued together to further increase the strength of the erected carton. If desired, the elements of the end flaps need not be glued together, although they are preferably glued together for practical manufacturing reasons, including the desirability of machine gluing the outermost portion of the side portions prior to folding.

Brief Description of the Drawings:

One presently preferred embodiment of the invention will now be described with reference to the accompanying drawings in which :

Figure 1 is a plan view of a die cut blank suitable for forming the carton embodying the invention;

Figure 2 is a plan view of a die cut blank suitable for forming a closure or lid for the carton formed from the blank of figure 1;

Figure 3 is a perspective view of one end of a carton partially erected;

Figure 4 is a perspective view of one end of the carton fully erected;

Figure 5 is a perspective view of an assembled carton and lid, and

Figure 6 is a perspective end view of a column stacked array of cartons embodying the invention.

Description of the Preferred Embodiment:

Referring firstly to Figure 1 of the drawings, the blank for forming a carton of corrugated board embodying the invention comprises a base 1 folded side panels 2,3, and 4,5, end flap portions 6 to 13 respectively extending from the ends of the side portions 2 to 5, and folded end portions 14, 15 and 16, 17 extending from the opposite ends of the base 1.

The end portions 14 and 16 have inwardly angled edges 18, 19 and 20, 21 and spaced transverse score or cut - crease lines 22, 23 and 24, 25 are formed to allow the end portions to be folded

over the end flap portions 6 to 13 when assembled as described below. The outermost end portions 15 and 17 have outwardly angled edges terminating in ear portions 26, 27 and 28, 29. Cut - crease lines 30, 31, and 32, 33 are formed along extensions of the edges 18 to 21 to enable the ear portions 26 to 29 to fold inwardly as the outermost end portions 15 and 17 are folded over the end flaps 6 to 13 and the ear portions 26 to 29 engage the inwardly angled side portions of the carton.

The outermost side panel portions 3 and 5, and preferably the outermost end flap portions 8 and 9 and 12 and 13 have glue applied thereto so that the side panel portions 2 and 3 and 4 and 5 are securely glued together in their folded condition.

The end panel portions 6 and 8, 7 and 9, 10 and 12 and 11 and 13 are separated by slots 34, 35, 36 and 37 which are angled outwardly from the fold lines between the side panel portions 2 to 5. The slots 34 to 37 may if desired be replaced by slit lines. The outward angling of the slots 34 to 37 produces a generally horizontal edge portion, two of which labelled 38 and 39, are shown in figure 3 of the drawings, as extending across the uppermost edge of the folded end flaps 40, 41 defined by the end flap portions 6 to 13.

One end of the erected carton is shown in Figure 4 of the drawings, and it will be noted that the end portion 15 has been folded over the end portion 14 and the end flaps 40 and 41 until the ears 26 and 27 frictionally engage the folded side portions 3 and 5 to hold the carton in its erected condition. For convenience, a finger notch 42 is formed in each outermost end

portion 15 and 17 to allow easy disassembly of the carton.

Referring now to Figure 2 of the drawings, the blank of a closure or lid of corrugated board suitable for closing the carton embodying the invention as shown. The blank comprises a top portion 50, folded side portions 51, 52 and 53, 54, and folded end portions 55, 56 and 57, 58 having side flaps 59, 60 and 61 adapted to extend between the folded portions 50 to 54 of the side portions of the lid.

The outermost side portions 52 and 54 have angled cut ends defining ear portions 62, 63 and 64, 65 further defined by the cut - crease lines shown.

The folded end portions 55 to 58 are preferably glued together and the angled sides of the outermost portions 56 and 58 define depressions in the assembled lid for receiving the ear portions 62 to 65 so that the lid may be securely held in its erected condition.

It will be noted that the dimensions of the base 1 of the carton and the external dimensions of the erected lid are very similar. This results in the ability to column stack in a more stable manner since lid sag is avoided if some movement occurs between upper and lower cartons in the stack.

An assembled carton and lid is shown in Figure 5 of the drawings and a column stacked array of cartons is shown in Figure 6 of the drawings. The inwardly inclined sides S of the carton and the shaped ends E of the carton are evident from Figure 5 of the drawings, as are the similar external dimensions of the lid L to the base 1 of the carton C. To facilitate easy removal of

the lid L, a hand notch N may be formed in the lid in the manner shown in Figure 2 of the drawings.

As is clearly evident from Figure 6 of the drawings, the inwardly inclined side portions S of the cartons in the column stacked array create air gaps G between adjacent cartons C such that any cooling atmosphere circulating around the stack may penetrate within the stack between the adjacent sides of the cartons in the array.

The inwardly inclined sides S of each carton makes it more stable when column stacked, and as mentioned above, the similar external dimensions of the lid to the base dimensions of the carton further increase stack stability. Maximum compressive strength of each carton is ensured by the folded and glued sides S and the angled slots or slits 34 to 37 providing horizontal top edges over which the end portions 15 and 17 are folded when the carton is erected.

It will be appreciated that the dimensions shown in the drawings are merely exemplary and may be modified to provide different carton dimensions, including different side and end heights. Similarly, if desired, the blank configuration shown in Figure 1 may be modified to provide inwardly inclined ends as well as inwardly inclined sides.

The entire contents of the provisional specification lodged with Australian Patent Application of which this is the complete specification is hereby imported into this specification and forms part of the disclosure of this specification. The claims form part of the disclosure of this specification.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A carton suitable for containing goods to be kept in cool storage, said carton comprising a base member, a pair of side members extending from said base member and a pair of end members extending from said base member, said side members and said end members being folded and interconnected to define said carton, said side members and/or said end members being shaped whereby the dimensions of the side members and/or end members are narrower at the top of the carton than at the bottom of the carton, such that the sides and/or ends or the carton are inwardly inclined with respect to said base member.

2. The carton of claim 1, wherein the end members only are shaped as defined in claim 1 so that the sides of the carton are inclined inwardly towards the top of the carton.

3. The carton of claim 1 or 2, wherein the sides of the carton are formed from a double thickness of the material from which the carton is formed to provide additional top-to-bottom compression in the carton.

4. The carton of any preceding claim, wherein the end flaps of the side members are slotted or slit at an acute angle to the fold line in the side members such that a portion each end flap projects above the remainder of the end flap to provide a horizontal edge portion against which the fold in each end portion engages to maximize the compressive strength of the erected carton.

5. The carton of any preceding claim, wherein the folded side portions of the carton are glued or otherwise secured together to

further increase the strength of the carton.

6. The carton of any preceding claim, wherein the elements of the end flaps are glued or otherwise secured together.

7. The carton substantially as hereinbefore described with reference to any one of the accompanying drawings.

8. The steps, features or integers disclosed in the accompanying specification or drawings, individually or in any combination.

DATED this August 27, 1990

SMITH SHELSTON BRADLE

Fellows Institute of Patent Attorneys of Australia

Patent Attorneys for the Applicant:

VISY BOARD PROPERTIES PTY. LTD.

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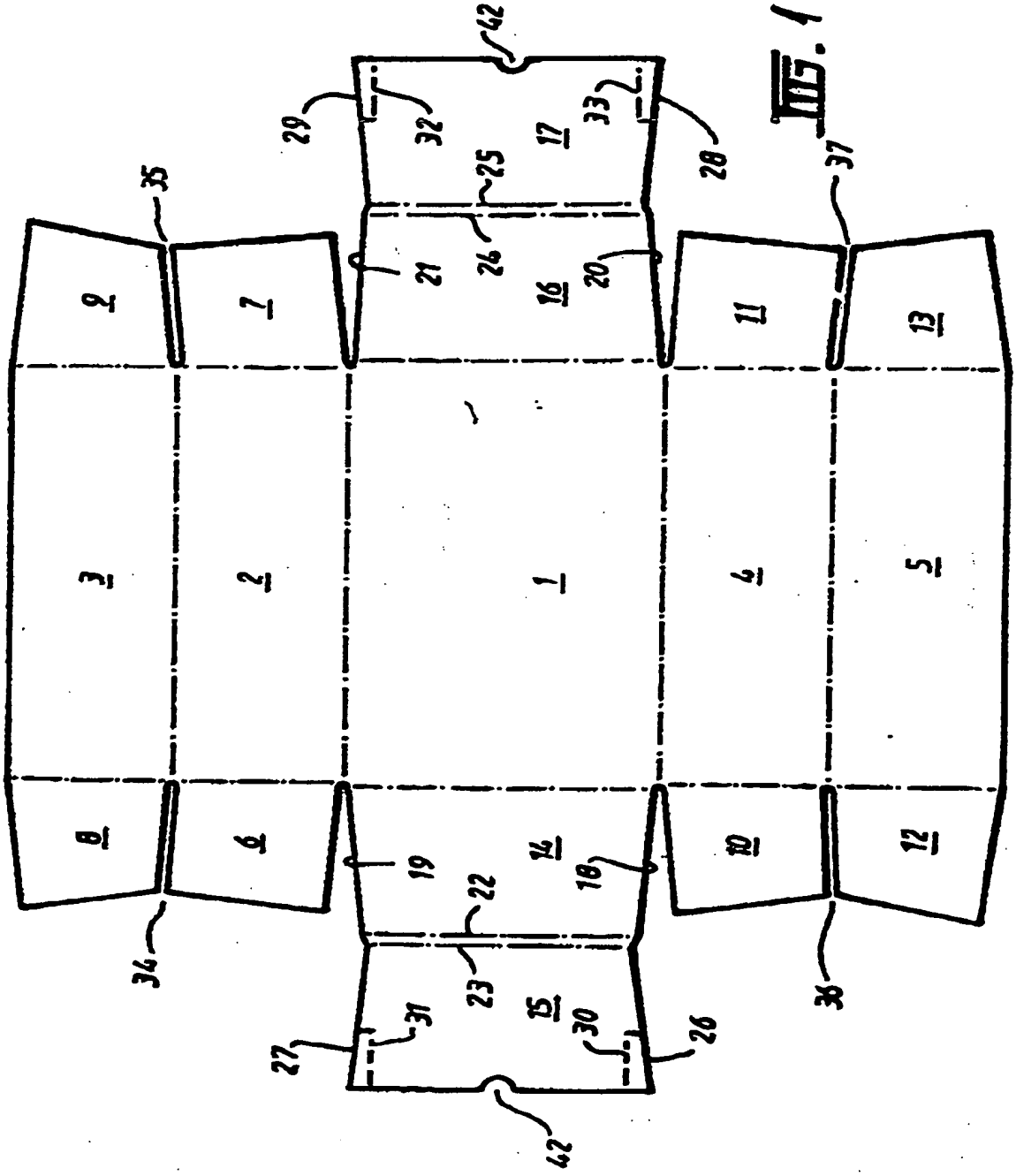
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Fig. 1.

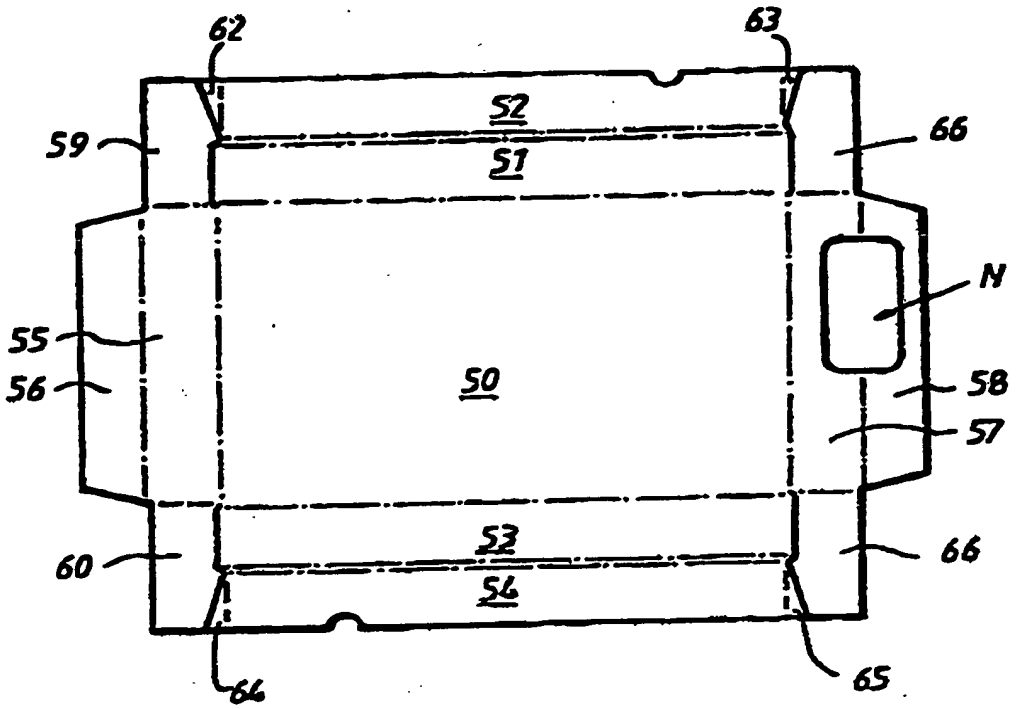



FIG. 2.

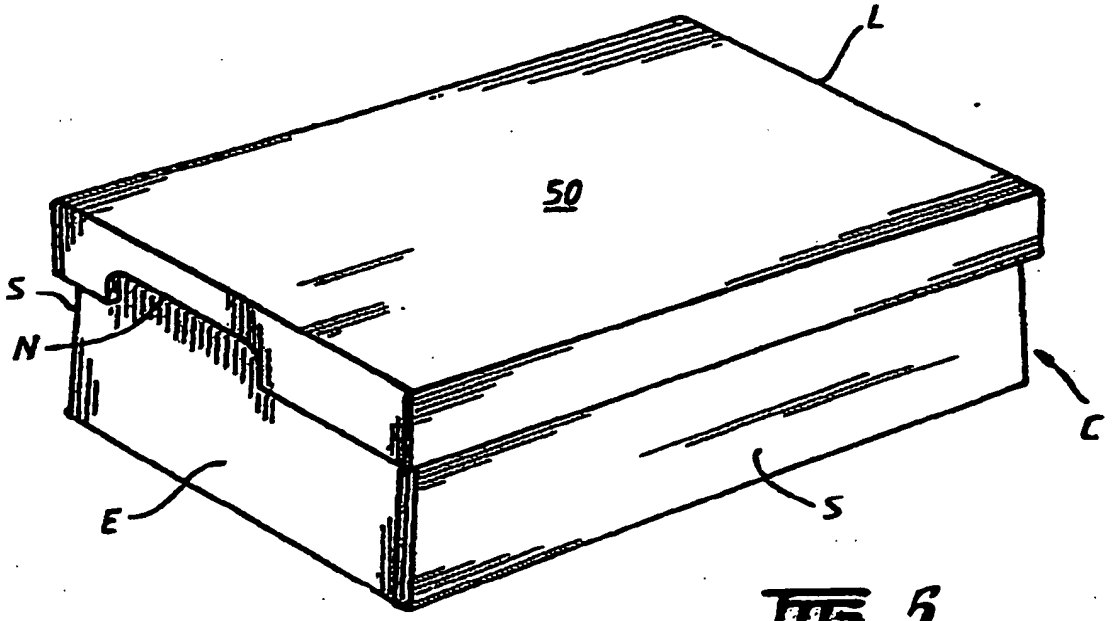
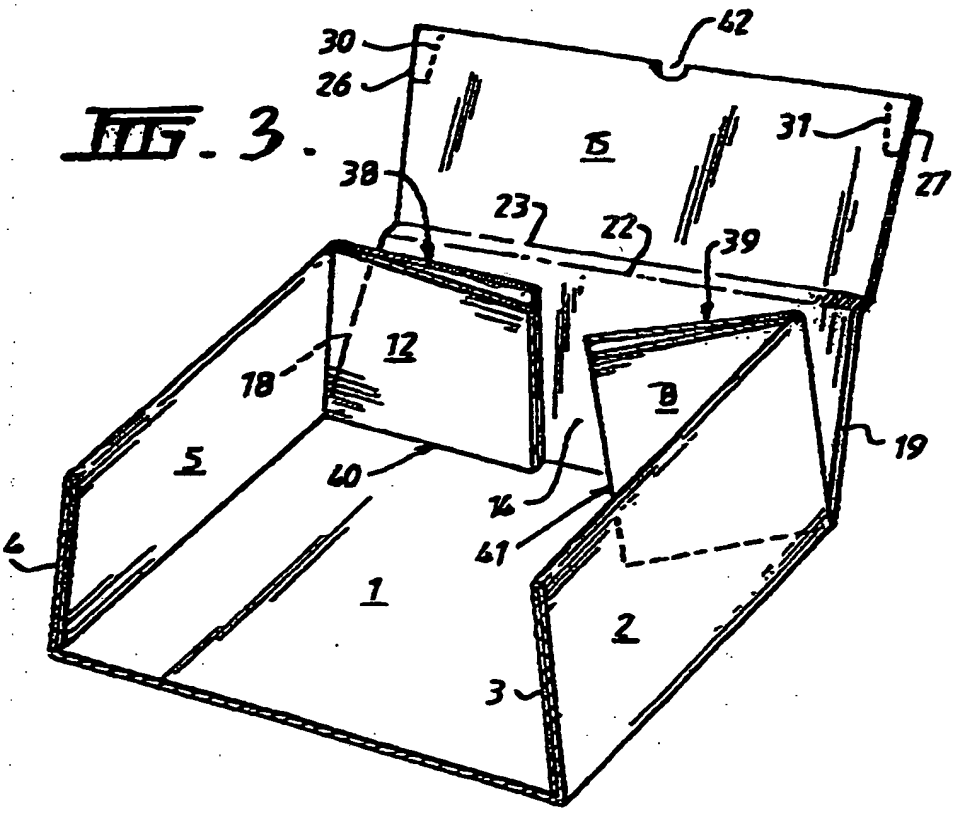



FIG. 5.

FIG. 3.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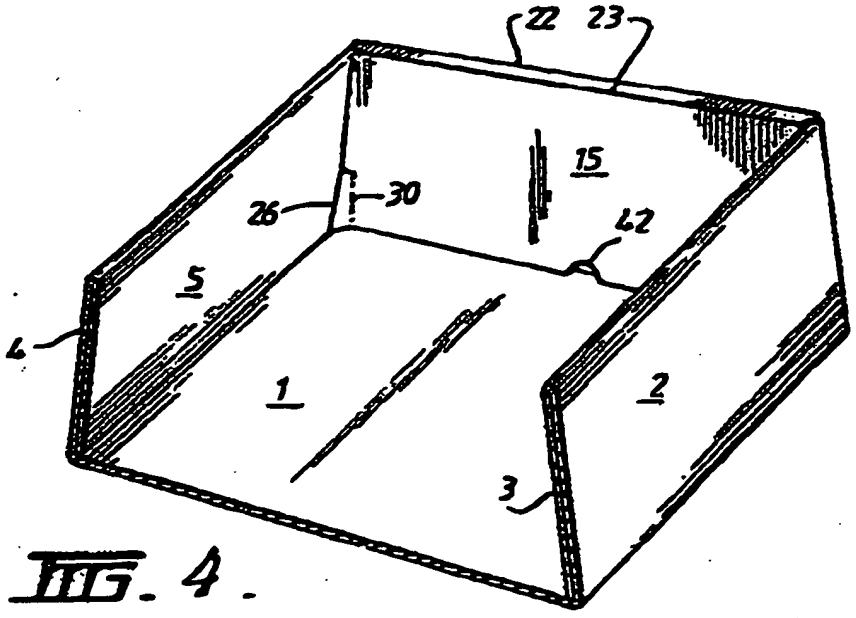
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FIG. 4.

Fig. 6.